

complementary to at least a portion of the sequence of the oligonucleotides on the nanoparticles in the first container. The kit also includes a third container holding nanoparticles having oligonucleotides attached thereto, the oligonucleotides having a sequence complementary to the sequence of a second portion of the binding oligonucleotide.

5 In another embodiment, the kit comprises a substrate having oligonucleotides attached thereto which have a sequence complementary to the sequence of a first portion of a nucleic acid, a first container holding nanoparticles having oligonucleotides attached thereto which have a sequence complementary to the sequence of a second portion of the nucleic acid, and a second container holding nanoparticles having oligonucleotides attached thereto which have a sequence complementary to at least a portion of the oligonucleotides attached to the nanoparticles in the first container.

10 In yet another embodiment, the kit comprises a substrate, a first container holding nanoparticles, a second container holding a first type of oligonucleotides having a sequence complementary to the sequence of a first portion of a nucleic acid, a third container holding a second type of oligonucleotides having a sequence complementary to the sequence of a second portion of the nucleic acid, and a fourth container holding a third type of oligonucleotides having a sequence complementary to at least a portion of the sequence of the second type of oligonucleotides.

15 In a further embodiment, the kit comprises a substrate having oligonucleotides attached thereto which have a sequence complementary to the sequence of a first portion of a nucleic acid. The kit also includes a first container holding liposomes having oligonucleotides attached thereto which have a sequence complementary to the sequence of a second portion of the nucleic acid and a second container holding nanoparticles having at least a first type of oligonucleotides attached thereto, the first type of oligonucleotides having a hydrophobic group attached to the end not attached to the nanoparticles so that the nanoparticles can be attached to the liposomes by hydrophobic interactions. The kit may further comprise a third container holding a second type of nanoparticles having oligonucleotides attached thereto, the oligonucleotides having a sequence complementary to

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at least a portion of the sequence of a second type of oligonucleotides attached to the first type of nanoparticles. The second type of oligonucleotides attached to the first type of nanoparticles have a sequence complementary to the sequence of the oligonucleotides on the second type of nanoparticles.

5 In another embodiment, the kit comprises a substrate having nanoparticles attached to it. The nanoparticles have oligonucleotides attached to them which have a sequence complementary to the sequence of a first portion of a nucleic acid. The kit also includes a first container holding an aggregate probe. The aggregated probe comprises at least two types of nanoparticles having oligonucleotides attached to them. The nanoparticles of the  
10 aggregate probe are bound to each other as a result of the hybridization of some of the oligonucleotides attached to each of them. At least one of the types of nanoparticles of the aggregate probe has oligonucleotides attached to it which have a sequence complementary to a second portion of the sequence of the nucleic acid.

In yet another embodiment, the kit comprises a substrate having oligonucleotides  
15 attached to it. The oligonucleotides have a sequence complementary to the sequence of a first portion of a nucleic acid. The kit further includes a first container holding an aggregate probe. The aggregate probe comprises at least two types of nanoparticles having oligonucleotides attached to them. The nanoparticles of the aggregate probe are bound to each other as a result of the hybridization of some of the oligonucleotides attached to each  
20 of them. At least one of the types of nanoparticles of the aggregate probe has oligonucleotides attached thereto which have a sequence complementary to a second portion of the sequence of the nucleic acid.

In an additional embodiment, the kit comprises a substrate having oligonucleotides attached to it and a first container holding an aggregate probe. The aggregate probe  
25 comprises at least two types of nanoparticles having oligonucleotides attached to them. The nanoparticles of the aggregate probe are bound to each other as a result of the hybridization of some of the oligonucleotides attached to each of them. At least one of the types of nanoparticles of the aggregate probe has oligonucleotides attached to it which have a

sequence complementary to a first portion of the sequence of the nucleic acid. The kit also includes a second container holding nanoparticles. The nanoparticles have at least two types of oligonucleotides attached to them. The first type of oligonucleotides has a sequence complementary to a second portion of the sequence of the nucleic acid. The second type of oligonucleotides has a sequence complementary to at least a portion of the sequence of the oligonucleotides attached to the substrate.

In another embodiment, the kit comprises a substrate which has oligonucleotides attached to it. The oligonucleotides have a sequence complementary to the sequence of a first portion of a nucleic acid. The kit also comprises a first container holding liposomes having oligonucleotides attached to them. The oligonucleotides have a sequence complementary to the sequence of a second portion of the nucleic acid. The kit further includes a second container holding an aggregate probe comprising at least two types of nanoparticles having oligonucleotides attached to them. The nanoparticles of the aggregate probe are bound to each other as a result of the hybridization of some of the oligonucleotides attached to each of them. At least one of the types of nanoparticles of the aggregate probe has oligonucleotides attached to it which have a hydrophobic groups attached to the ends not attached to the nanoparticles.

In a further embodiment, the kit may comprise a first container holding nanoparticles having oligonucleotides attached thereto. The kit also includes one or more additional containers, each container holding a binding oligonucleotide. Each binding oligonucleotide has a first portion which has a sequence complementary to at least a portion of the sequence of oligonucleotides on the nanoparticles and a second portion which has a sequence complementary to the sequence of a portion of a nucleic acid to be detected. The sequences of the second portions of the binding oligonucleotides may be different as long as each sequence is complementary to a portion of the sequence of the nucleic acid to be detected.

In another embodiment, the kit comprises a container holding one type of nanoparticles having oligonucleotides attached thereto and one or more types of binding oligonucleotides. Each of the types of binding oligonucleotides has a sequence comprising